DOCUMENT RESUME

ED 185 532 CS 005 403

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TITLE College Reading and Study Programs: Do They Make Any Difference?
PUB DATE Mar 80
NOTE 11p.: Paper presented at the Annual Meeting of the Western College Reading Association (13th, San Francisco, CA, March 27-30, 1980).

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS College Students; *Grade Point Average; Higher Education; *Program Effectiveness; *Reading Comprehension; *Reading Programs; *Reading Rate; Reading Research; *Student Improvement; Study Habits; Vocabulary Development

ABSTRACT

After research between 1960 and 1977 relating to college reading program effectiveness was identified, a statistical procedure called Meta-Analysis was used to integrate findings and determine any composite benefit of instruction. Of 676 references on the initial list, 66 studies were identified as having quantifiable data within the limits of the research criteria. Only 28 studies employed adequate controls and maintained satisfactory validity to warrant inclusion in the Meta-Analysis. Overall, reading-study instruction proved generally beneficial as measured by the dependent variables reading rate, comprehension, grade point average (GPA), vocabulary, and study habits. The "average" student receiving college reading instruction was "better off" than 83% of untreated students. For the 6,140 students who participated in the college reading-study programs or served as controls, significant composite gains in rate, comprehension, vocabulary, and GPA were found. Typical students increased their reading rates by 100-150 words per minute, with corresponding increases in comprehension. An unexpected benefit of instruction was the significant gain measured by change in GPA, with participants achieving a .37 GPA advantage over nonparticipants at the conclusion of instruction. (RI)

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COLLEGE READING AND STUDY PROGRAMS: DO THEY MAKE ANY DIFFERENCE?

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Presented At

The Annual Meeting of the Western College Reading Association

San Francisco, CA, March 27-30, 1980

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COLLEGE READING-STUDY PROGRAMS: DO THEY MAKE ANY DIFFERENCE?

Reading-study programs mushrooming on college and university campuses represent one of the most rapidly growing, diverse, and responsive aspects of academic life. In California alone 80 percent of state colleges and universities now provide such assistance;(1) nationwide, 60 percent of college campuses offer reading-study-writing programs supplemental to traditional course offerings(2). One recent computerized nationwide survey revealed that nearly all centers in universities in the United States were developed within the last ten years(2). Furthermore, reading-study-writing programs are not limited to remedial efforts. This has been well established by the widespread status and recognition accorded programs at Harvard (since 1915) and Stanford (1969) and by the elite students and faculty groups who participate in them. In an era of economic limitation, however, faculty and administration throughout the nation are concerned over cost effective factors and are interested to know what difference such instruction makes in student performance. Are such programs worth the cost? To what degree do they aid the students who participate?

Research Procedure

To investigate these questions, extensive search procedures were utilized to identify research reports and dissertations written between 1960-1977 relating to the effectiveness of college reading and study programs. The Meta-Analysis*, a statistical

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*Meta: Greek word meaning beyond, above or over, used by Glass to refer to analysis of a large collection of individual statistical results in order to integrate their findings.

procedure introduced by Glass(3), was then employed in order to analyze and integrate findings from the number of individual studies and to determine any composite benefits of instruction. From the initial list of 676 references, sixty-six studies were identified which reported data in quantifiable terms and appeared to meet the research criteria. However, only twenty-eight studies employed adequate controls and maintained satisfactory validity. These studies reported mean gains between treatment and comparison groups on one or a combination of the following five variables: changes in Reading Rate, in Comprehension, in Grade Point Average, in vocabulary and in Study Habits. These twenty-eight studies, representing 6,140 students who enrolled in reading-study programs or served as controls, comprised the Meta-analysis.

The meta-analysis procedure utilized "effect size" statistics for each treatment outcome reported. The "effect size" as measured on the outcome variable (for example, Reading Rate) was the difference between treated and untreated groups divided by the within group standard deviation. Each effect size thus became an observation and inferential statistics were applied. In this case the dependent t-test was used to determine if the two groups differed significantly. Each study was also examined for reported inclusion of six content factors, seventeen operational factors(4) and program effects. The formula(3) used for this calculation was:

$$ES = \frac{\bar{X}_T - \bar{X}_C}{S_C}$$

Each study was categorized on the basis of its description of the students participating. Three categories identified were: 1) corrective-remedial programs, generally high-risk, open admission students with minimal admission qualifications who often

were required to participate; 2) academic support programs, frequently freshmen or sophomores on probation; 3) developmental programs, usually those programs open to all entering freshmen and/or other college students.

The paucity of programs reporting adequate data was a limitation to this study. Reports frequently did not specify those program content and operational factors which could permit subsequent investigations to replicate the study.

Research Findings

From the twenty-eight studies which comprised the meta-analysis, sixty-six treatment effects were computed. These effect statistics integrated the composite benefits identified for the total sample of 6,140 students enrolled in college reading-study programs or serving as controls. Overall reading-study instruction did prove generally beneficial as measured by dependent variables such as reading rate, comprehension, Grade Point Average (GPA), vocabulary and study habits. Figure 1 illustrates these composite findings, using a normal distribution. The mean effect size for the 66 treatments was 0.94 with a standard deviation of 1.76, and statistically significant (.05) gains were made by treated subjects over untreated controls. In other words, the average student receiving college reading-study instruction was "better off" than 83 percent of untreated students.

To answer questions relating to the specific nature of the gains made by the students, the reports of change in reading rate, comprehension, GPA, vocabulary and study habits were examined. Table 2 reports these findings and Figures 2 and 3 illustrate them, again using a normal distribution. Significant gains were made in four of the five variables tested: 1) in Reading Rate ($t=2.40$); 2) in comprehension ($t=2.84$); 3) in GPA ($t=2.5$);

and in 4) vocabulary (t=2.68). Gains in reading rate were appreciably larger than the other three variable outcomes.

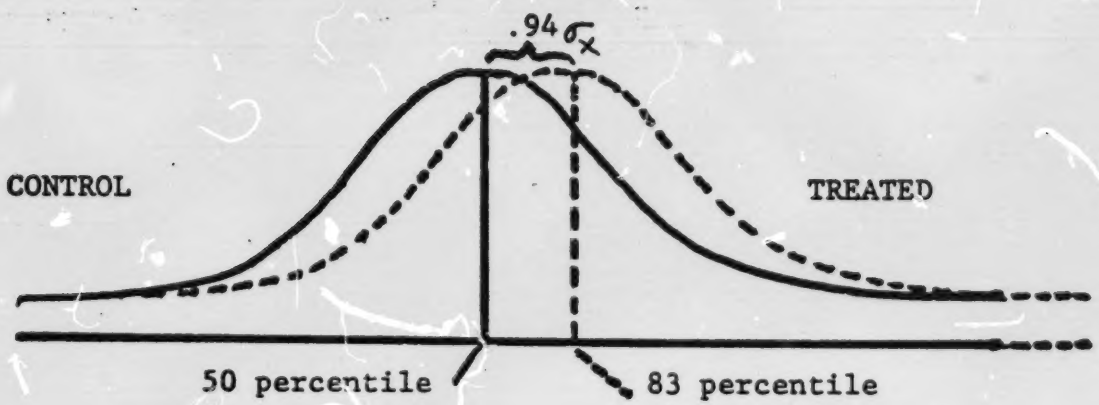

Figure 1

The composite effect of reading-study instruction in relation to untreated control groups, based on 66 effect sizes computed from 28 individual studies of students enrolled in college and university reading-study programs. It represents 6,046 treated and untreated subjects.

σ = Standard Deviation

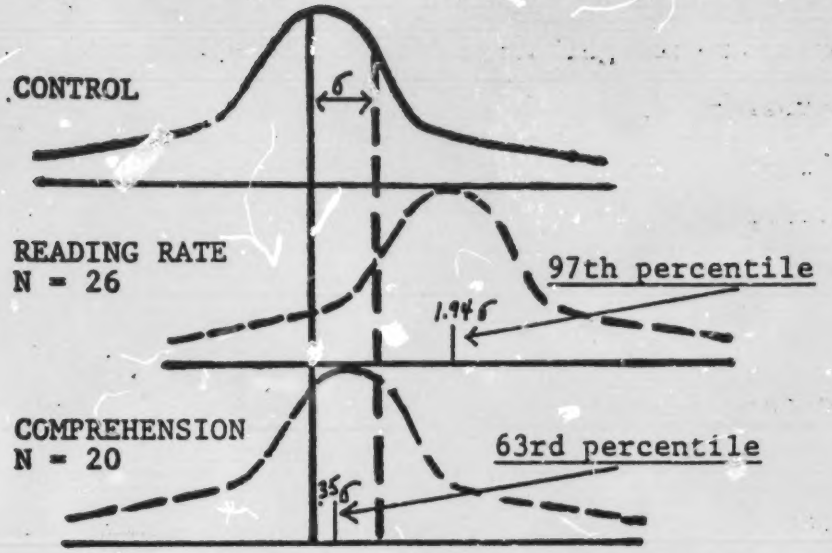

Figure 2

Normal curves depicting the effects of treatment with college and university students in relation to Reading Rate and Comprehension benefits as compared to untreated control groups.

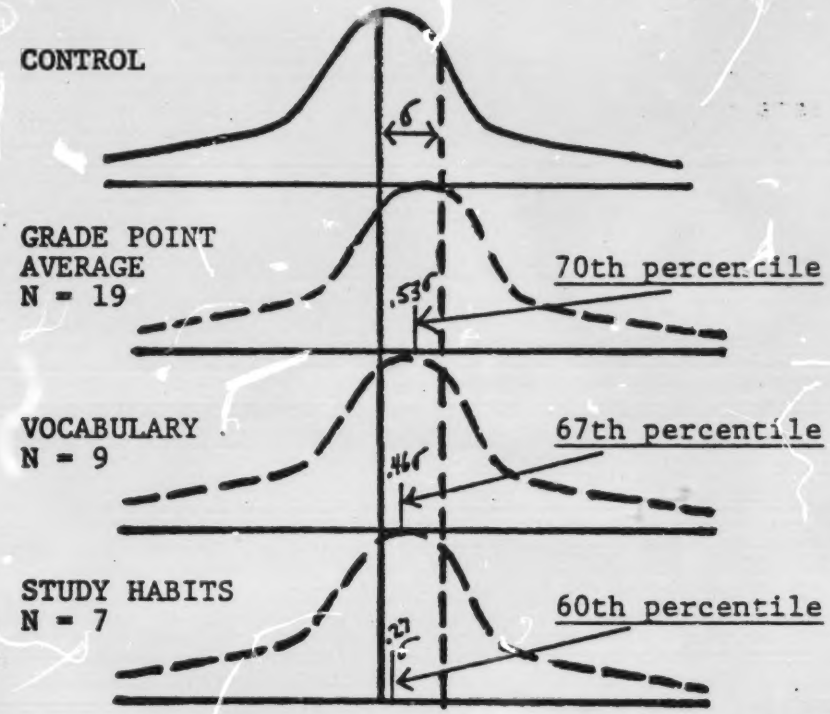

Figure 3

Normal curves depicting the effects of treatment with college-university students in relation to Grade Point Average, Vocabulary and Study Habit benefits as compared to untreated control groups.

σ = Standard Deviation

These findings may suggest that reading rate responds to treatment/testing more readily than other variables measured. The effect of increased rate/comprehension on students' work effectiveness was examined by Grob(5). Secondary students reading slowly were found to spend excessive amounts of time in reading-study, a finding which was not unexpected. In this study typically students in treatment groups increased their rate by 100-150 words per minute. Gains in comprehension were also statistically significant. Interpreted in relationship to reading rate gains, it indicates, as numerous other researchers have noted, that students receiving instruction in college reading-study programs increase their rate appreciably with smaller yet significant gains in comprehension. In other words, they were able to read college materials faster with greater understanding.

One unexpected benefit of instruction was the statistically significant gains measured by changes in GPA. Post-instruction GPA mean gains made by the treatment groups were not reflected in the meta-analysis, although in several studies such gains reflected a significant accumulative benefit. Typically, participants reported by the meta-analysis achieved a .37 GPA advantage over non-participants at the conclusion of the instruction. This does not reflect post-instruction gains in GPA measured over longer time sequences, for example, over one, two or three semesters.

The relationship between program effect and content and operational factors was less conclusive due to the deficiency of reporting these factors noted previously. A complete analysis is reported separately by the author(6).

Conclusion

College reading and study instruction makes a difference

in students' reading rate, in their comprehension, in their GPA, as well as other accumulative benefits. Statistically significant benefits were found for those students who participate in such programs.

1. For the 6,140 students who participated in college reading-study programs or served as controls, significant composite gains in rate, comprehension, vocabulary and grade point average benefits were found. The "average student" receiving college reading-study instruction was "better off" than 83 percent of untreated students.

2. The specific nature of these gains was also of interest. In four of the five variables tested, statistically significant changes occurred. Typically, students increased their reading rate by 100-150 words per minute with corresponding increases in comprehension. In other words, they were able to read college materials faster with greater understanding.

3. An unexpected benefit of instruction was the significant gains measured by changes in grade point average with participants achieving a .37 GPA advantage over non-participants at the conclusion of instruction. However, subsequent GPA benefits over longer time sequences, where greater benefits would be expected to accrue, were not examined by this analysis.

Since college students are expected to spend a considerable time in reading and study, such increases in their efficiency logically appears to enhance their chances of academic success. The relationship between slow reading rate and attrition appears to be only one productive aspect for further investigation. Faculties and administrators are concerned that students' study times are

legitimately productive. The growth of college reading and study programs is one indication of this concern. Perhaps on the college campus we are now ready to accept the statement attributed to Goethe at age seventy one: "I have spent my lifetime learning to read."

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